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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/591,987

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EXAMINER

SINGAL, ANKUSH K

ART UNIT

PAPER NUMBER

2895

NOTIFICATION DATE

DELIVERY MODE

02/05/2010

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

sughrue@sughrue.com  
PPROCESSING@SUGHRUE.COM  
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<b>Office Action Summary</b>	<b>Application No.</b> 10/591,987	<b>Applicant(s)</b> YASUDA ET AL.	
	<b>Examiner</b> ANKUSH k. SINGAL	<b>Art Unit</b> 2895	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 07 December 2009.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-4 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)                        | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Response to Arguments***

Applicant's arguments with respect to claims 1-4 have been considered but are moot in view of the new ground(s) of rejection.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

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consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Koide et al.(US 6,821,800).

Re. claim 1, Koide et al. discloses a pn junction type Group III nitride semiconductor light-emitting device comprising a light-emitting layer(5) of multiple quantum well structure in which well layers(5b) and barrier layers(5a and 5c) including Group III nitride semiconductors(i.e. GaN) are alternately stacked periodically between an n-type clad layer(3b) and a p-type clad layer(7) which are formed on a crystal substrate (1) and which include Group III nitride semiconductors, wherein a first end layer of the light-emitting layer is in contact with the n-type clad layer, and a second end layer of the light-emitting layer is in contact with the p-type clad layer(figure 1), both the first and second end layers are barrier layers(5a and 5c), and the second end layer(5c) is thicker than the barrier layer of the first end layer(figure 1)(Column 4,lines 35-67), wherein the barrier layer of the second end layer(5c) includes n-type impurities(Column 5,lines 7-8) (Column 3,lines 34-41) and the thickness of the barrier layer be set 3nm or more(Column 5,lines 33-34 and 14-29) but does not teach wherein the barrier layers other than the second end layer have a thickness of 15 nm or more and 50 nm or less, and the second end layer has a thickness of 1.2 or more times and 2.5 or less times the thickness of the barrier layers other than the second end layer. However Koide et al.

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disclosure for given conditions of the claimed invention , the claim range is considered to be an obvious matter of finding an optimum workable range for some chosen design requirement utilizing Koide et al. method.

Note that it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves routine skill in the art. In re Aller, 105 USPQ 233.

Any difference in the claimed invention and the prior art may be expected to result in some differences in properties. The issue is whether the properties differ to such an extent that the difference is really unexpected. In re Merck & Co., 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986)

Re. claim 4 as discussed above in claim 1, Koide et al. discloses all the limitations as discussed above in claim 1 including the second end layer has joined thereto a well layer which is not intentionally doped with impurities (Column 4, lines 55-63 ).

Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Koide et al. (US 6,821,800) as applied to claim 1 and further in view of Itaya et al. (JP 7086637).

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Re. claim 2 as discussed above in claim 1, Koide et al. discloses all the limitations as discussed above in claim 1 except wherein each of the barrier layers has a thickness increased gradually from the first end layer toward the second layer.

However, Itaya et al. teaches wherein each of the barrier layers has a thickness increased gradually from the first end layer toward the second layer (Para[0027-0029]) to be applicable in semiconductor laser.

Therefore it would have been obvious for one with ordinary skill in the art at the time the invention was made to provide Koide et al. structure with wherein each of the barrier layers has a thickness increased gradually from the first end layer toward the second layer of Itaya et al. to be applicable in semiconductor laser.

Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Koide et al. (US 6,821,800) as applied to claim 1 and further in view of Marui et al. (JP 2001102629).

Re. claim 3 as discussed above in claim 1, Koide et al. discloses all the limitations as discussed above in claim 1 except wherein the second end layer has an impurity concentration low at its junction portion relative to the well layer, highest at its central portion and reduced gradually from the central portion toward the p-type clad layer.

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However, Marui et al. teaches wherein the second end layer has an impurity concentration low at its junction portion relative to the well layer, highest at its central portion and reduced gradually from the central portion toward the p-type clad layer(Para[0025-0042]) for obtaining a LED element with blue light.

Therefore it would have been obvious for one with ordinary skill in the art at the time the invention was made to provide Koide et al. structure with wherein the second end layer has an impurity concentration low at its junction portion relative to the well layer, highest at its central portion and reduced gradually from the central portion toward the p-type clad layer of Marui et al. for obtaining a LED element with blue light.

### ***Conclusion***

1. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ANKUSH k. SINGAL whose telephone number is (571)270-1204. The examiner can normally be reached on monday-friday 7am-5pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Drew Richards can be reached on (571)272-1736. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Fernando L. Toledo/  
Primary Examiner, Art Unit 2895

/A. k. S./  
Examiner, Art Unit 2895